

***Corsia dispar* D.L.Jones & B.Gray (Corsiaceae), a new species from Australia, and a new combination in *Corsia* for a New Guinea taxon**

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Summary

Jones, D.L. & Gray, B. (2008). *Corsia dispar* D.L.Jones & B.Gray (Corsiaceae), a new species from Australia, and a new combination in *Corsia* for a New Guinea taxon. *Austrobaileya* 7(4): 717–722. *Corsia* Becc., a highly specialised monocotyledonous genus, has been recorded from Australia for 40 years; however, the single known species has not been previously studied in detail, nor formally described. The new species *C. dispar* D.L.Jones & B.Gray is named and illustrated and notes on its taxonomy and ecology are provided. *Corsia wiakabui* (Takeuchi & Pipoly) D.L.Jones & B.Gray is newly recognised at specific rank, based on *C. purpurata* L.O.Williams var. *wiakabui* Takeuchi & Pipoly.

Key Words: Corsiaceae, *Corsia*, *Corsia dispar*, *Corsia purpurata* var. *wiakabui*, *Corsia wiakabui*, new species, new combination, Queensland flora, Australian flora, New Guinea flora

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Introduction

Corsia Becc. is a genus of about 25 species developed primarily in New Guinea where there are c. 23 species; two others occur in the Solomon Islands and a solitary species is recorded for northern Australia (Van Royen 1972). Somewhat orchid-like, and often mistaken for a member of that group of plants, they can be immediately distinguished by the presence of a ring of stamens surrounding a more or less central style. The stamens are connate basally and with the style form a partially united structure. They are not fully fused, unlike the gynostemium in Orchidaceae. Additionally their pollen grains are free and not coherent to form pollinia (Rudall & Eastman 2002).

Species of *Corsia* are seasonally deciduous, mycoheterotrophic terrestrial herbs which are usually discovered by accident rather than design. They grow in high rainfall montane forests where there is an accumulation of surface litter. Most species grow in areas of difficult access, have a short or limited flowering period, are only above ground when flowering or fruiting, and their life cycle is

intimately associated with periods of heavy rainfall. The majority of species appear to be narrow endemics with a restricted range. In fact Van Royen (1972) notes that in New Guinea “almost every mountain range seems to have its own species”. All species are generally so elusive and difficult to see in the gloomy surroundings where they grow, that they are undoubtedly undercollected, although occasionally they have been observed to be locally abundant (Cribb 1985).

The Australian species of *Corsia* was first collected by Bruce Gray in 1968 and identified to generic level by Jim Willis at MEL. Correspondence by the senior author with Pieter Van Royen established that it was an undescribed species with affinities to *C. unguiculata* Schltr. from New Guinea, but with a number of distinctive features which readily separated it from all New Guinea taxa. Van Royen (1972) placed all the then known taxa in two sections, both of which he described.

The family Corsiaceae has traditionally been grouped with Burmanniaceae and Thismiaceae in the Burmanniales (Dahlgren *et al.* 1985); however, a phylogeny inferred from

large-subunit(26S) ribosomal DNA sequences suggests that the order Burmanniales is polyphyletic (Neyland 2002). A second similar phylogenetic study also suggests that the Corsiaceae is polyphyletic and provides compelling evidence for the inclusion of *Corsia* within the Liliales (Neyland & Hennigan 2003).

Generic features of *Corsia*

Since *Corsia* has some interesting specialised characters and is of very limited distribution in Australia, some notes on its generic features may be pertinent. Species of *Corsia* are highly specialised, achlorophyllous, cryptic herbs with a mycoheterotrophic life style. The plants are leafless, with fine filamentous roots which ramify for surprisingly long distances through leaf litter. The rhizome is much reduced and grows in increments which terminate in a flower stem. The thin, wiry scape bears sheathing bracts and a single terminal flower which, in the New Guinea species, is erect in bud. The perianth segments consist of three petals and two lateral sepals which are similar or subsimilar in shape and size. The third sepal is greatly expanded and modified to form a labellum (note that in Orchidaceae the labellum is a modified petal). All species of *Corsia* from New Guinea have the labellum held erect or more or less held horizontally like an umbrella above the stamens and style, and all have six stamens. The staminal filaments are connate basally and also fused with the base of the style to form a column-like structure. The filaments are erect in bud and also in the early stages of anthesis and then the anthers fall off and the filaments recurve, leaving the style to elongate and the stigmatic lobes to expand and become receptive. The fruit is an elongated three-valved capsule with the valves spreading outwards at maturity, the placentas detaching from the outer walls and the seeds hanging from long thread-like funicles.

Infrageneric Classification of *Corsia*

Two sections, *Sessilis* and *Unguiculatis*, were recognised within *Corsia* by Van Royen (1972), but as section *Sessilis* contains *C. ornata* Becc., the designated type of the genus, it must be recognised as section *Corsia*

(ICBN, autonym rule, article 22). Additionally the adjectival epithet *unguiculatis* should be *Unguiculatae* (ICBN, article 21.2). In both section *Corsia* and section *Unguiculatae*, the ovary is straight or slightly curved, the buds are erect, the labellum is held erect or above the sepals and petals like an umbrella and there are six functional stamens and no staminodes. These sections can be distinguished thus:

Section *Corsia* - Petals and sepals linear, rarely ovate-linear, usually hanging down beneath the labellum; basal callus attached to the ovary with a broad base. **Type species:** *C. ornata* Becc.

Section *Unguiculatae* Van Royen - Petals and lateral sepals ovate, much shorter than the labellum, curved inwards to form a cup-like structure which holds the stamens and style; basal callus a narrow linear lamella. **Type species:** *C. unguiculata* Schltr.

Unique features of the Australian species

The Australian species of *Corsia* is quite divergent from all New Guinea taxa and differs in at least four significant morphological features.

1. The ovary is strongly arcuate to uncinata and as a consequence the buds are cernuous (ovary straight to slightly arcuate in New Guinea taxa, with erect buds).
2. The labellum is held below the perianth segments (held erect or above the perianth segments like an umbrella in the New Guinea taxa).
3. The lateral sepals and petals recurve away from the stamens and style (in section *Unguiculatae* these organs hang down beneath the labellum, whereas in section *Corsia* they curve inwards to form a cup-like structure which holds the stamens and style).
4. The flowers have five stamens and a staminode (six stamens and no staminodia in the New Guinea species).

The Australian species does not align into either of the two sections as circumscribed above. A new infrageneric taxon may be required; however, this should wait until a detailed phylogenetic analysis is carried out.

Taxonomy

Corsia dispar D.L.Jones et B.Gray, **species nova** ab *C. unguiculata* Schltr. ovario recurvissimo; floribus ferrugineis, labello ovato ad basim cuneato et limbo multo crassior et callo brevi atque calcariformi, differt. **Typus:** Queensland. COOK DISTRICT: Longlands Gap, Herberton Range, 17°28'S, 145°38'E, 6 April 1999, *B.Gray 7516* (holo: QRS*; iso: BRI, CANB, MEL, MO, NSW).

Corsia sp. (Herberton Range B.Gray 3994) (Bostock 2007).

Brownish pink terrestrial herb growing in loose colonies. Roots filamentous, branched, arising from nodes on the rhizome. Rhizome horizontal, c. 4 mm thick, produced in annual increments. Leaves reduced to sheathing bracts. Scape erect, 8–18 cm long, 1.5–2 mm thick, terete, brownish pink to pale mauve. Bracts closely sheathing, 4–7, ovate to ovate-lanceolate, 10–25 mm long, 4–6 mm wide, pallid, acuminate. Pedicel 4–6 cm long. Ovary arcuate to uncinat, 15–20 mm long, c. 1.5 mm wide, brownish pink with reddish ribs. Flower solitary, 2–2.6 cm long, 1.3–1.6 cm wide, mostly brownish pink to light reddish brown. Lateral sepals and petals recurved away from the stamens and style, asymmetrical, ovate, 7–8 mm long, 2.5–3 mm wide, translucent white, irregularly mottled with purplish-red, the apex long-acuminate, darker, papillate, contracting and becoming filiform with age. Labellum, including limb, 20–30 mm long, projecting below the perianth segments; limb projecting downwards, c. 5 mm long and 2 mm wide, whitish, winged; lamina at right angles to the limb, ovate, 15–25 mm long, 10–14 mm wide, light reddish brown to brownish pink with a cream basal edge, with 16–24 darker longitudinal nerves, acuminate to long-acuminate. Callus a small projecting reddish-black spur at the junction of the labellum limb and lamina. Stamens 5, and a staminode on the medial side, held beneath the lateral sepals and petals; filaments c. 1.5 mm long, white, connate basally, initially erect then recurved; anthers oblong-elliptic, c. 1.7 mm long, yellow, abscising with age;

staminode anterior to the style, similar in size and shape to a filament, remaining erect. Style columnar, c. 1.7 mm long; stigma three-lobed, yellow. Capsule erect, linear-oblong, 20–35 mm long, 2–2.5 mm wide, brownish. Seeds red-brown to blackish, with translucent funicles. **Fig. 1.**

Additional specimens examined: Queensland. COOK DISTRICT: Windsor Tableland, 23 km past Spencer Creek, S.F. 144, 16°14'S, 145°00'E, Apr 2002, *Booth 3081*, *Jensen & Cooper* (BRI); W of Karnak via Mossman, 16°23'S, 145°16'E, Jan 1995, *Cooper & Cooper WWC 869* (QRS); Mt Lewis, 16°35'S, 145°15'E, Jan 1994, *Cooper & Cooper WWC720* (QRS); S.F.R. 194, Western, Compartment 52, 17°17'S, 145°27'E, Feb 1967, *Dansie AFO4010* (BRI, QRS); S.F.R. 194, Western, Compartment 53, 17°18'S, 145°25'E, Feb 1976, *Hyland 8632* (QRS); Massey Creek, Ravenshoe – Millaa Millaa road, 17°35'S, 145°35'E, Feb 1977, *Gray 274* (QRS); Massey Creek, Ravenshoe – Millaa Millaa road, 17°36'S, 145°33'E, May 2002, *Holmes 204* (BRI); Massey Creek, Portion 297, Parish of Dirran, 17°37'S, 145°35'E, Apr 1985, *Gray 3994* (BRI, QRS); Massey Creek near Ravenshoe, 17°37'S, 145°35'E, Mar 2004, *Cooper & Jensen WWC 1837* (CANB); c. 1 km N of Chamillan Creek crossing, Ravenshoe – Koombooloomba road, 17°42'S, 145°31'E, Mar 1968, *Gray s.n.* (CANB); road to Koombooloomba Dam, 1 km N of Charmillan Creek, 17°42'S, 145°31'E, Mar 2004, *Gray 8901* (QRS).

Distribution and ecology: *Corsia dispar* is widespread on the Atherton Tableland, Mt Lewis and Windsor Tableland areas in north-eastern Queensland, but is seldom collected. It grows on slopes close to streams in tall rainforest on both basalt and granite formations. Plants are found in small, loose groups among leaf litter in gravelly loam. Recorded altitude ranges from about 900 to 1100 m.

Notes: *Corsia dispar* would seem to be most closely related to *C. unguiculata* as the two species share an extended basal limb on the labellum and a narrow callus. The new species can however be readily distinguished by its strongly recurved ovary (straight in *C. unguiculata*), light reddish brown flowers (purplish-red in *C. unguiculata*), ovate labellum with a cuneate base (broadly ovate with a cordate or truncate base in *C. unguiculata*), much thicker basal limb and, with a short, erect, spur-like callus (narrow upright crested ridge in *C. unguiculata*).

The roots of *Corsia dispar* definitely branch although Van Royen (1972) records

*all specimens from QRS are now housed in CNS

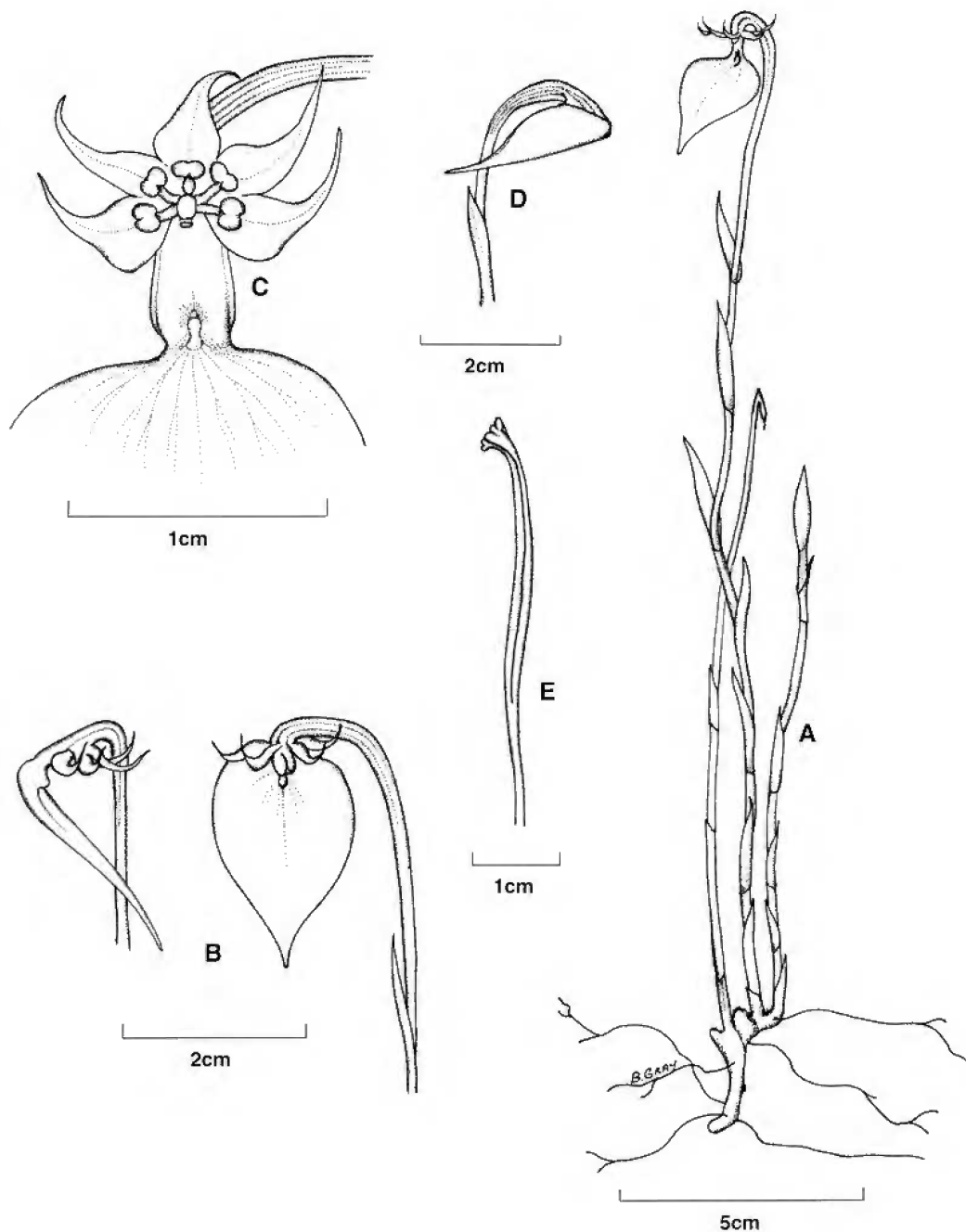


Fig. 1. *Corsia dispar*. A. flowering plant. B. flower, side view and front view. C. top of flower showing tepals, stamens, staminode, labellum limb, base of labellum lamina and callus. D. bud. E. capsule. A & B from *Gray 7516* (QRS); C from *Gray 8901* (QRS); D & E from *Cooper WWC 1837* (QRS). Del. B. Gray.

roots in the New Guinea species as unbranched. This appears to be an oversight as several collections from New Guinea at CANB also have branched roots. The flowers of *C. dispar* are protandrous as previously noted in other taxa (Smith 1907; Gibbs 1917; Van Royen 1972). Van Royen (1972) also noted in his genus description that the anthers are introrse, however the anthers are extrorse at anthesis in *C. dispar*. They are also noted in other publications as being extrorse (Dahlgren *et al.* 1985). Similarly in the family description Van Royen noted that the pedicels usually elongated after flowering but, whereas in *C. dispar* a thickening of the pedicel after fertilisation has been observed, no increase in length was measured on fruiting specimens.

Phenology: Plants flower mainly in January–March (rarely as late as May) and fruit in March–April (once in June). In seasons of regular or continuous rainfall, new inflorescences are produced from the rhizomes and extend the flowering and fruiting period.

Etymology: The specific epithet is from the Latin *dispar*, *disparis*, unlike, dissimilar, different, in reference to the distinctive characters of the Australian species.

New combination for a New Guinea taxon

The rank chosen for *Corsia purpurata* var. *wiakabui* (Takeuchi & Pipoly 1998) seems inappropriate in such a highly specialised genus as *Corsia*. Any perceived relationship by the authors between *Corsia purpurata* and its variety must be considered tenuous, as species of *Corsia* are generally considered to be narrow endemics (Van Royen 1972). By contrast *Corsia purpurata*, which occurs in the vicinity of Lake Habbema in Irian Jaya, and *C. purpurata* var. *wiakabui*, described from specimens collected in New Ireland, are separated by a geographical distance of more than 2000 km and occur on different tectonic plates. Morphologically *Corsia purpurata* var. *wiakabui* can be distinguished from *C. purpurata* by its much larger labellum (16–19 mm × 20–23 mm) which is transversely ovate to flabellate with a nearly truncate base. By contrast the labellum of *Corsia purpurata* is 10–13 mm × 9–10 mm, elliptic-rhomboid in shape and with a cuneate base. From

these biogeographical and morphological considerations it seems best to consider these taxa specifically distinct and a new combination is here made at that rank.

Corsia wiakabui (Takeuchi & Pipoly) D.L.Jones & B.Gray, **combinatio et status nova**

Basionym: *Corsia purpurata* L.O.Williams var. *wiakabui* Takeuchi & Pipoly, *Sida* 18: 164 (1998). **Type:** Papua New Guinea. NEW IRELAND: Hans Meyer Range, pond next to “Lake Camp”, 28 January 1994, *W.Takeuchi & J.Wiakabu* (holo: LAE, *n.v.*).

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